WHAT IS CLAIMED IS:

1. A method of ovulation induction in a female host comprising the administration of a non-polypeptide cAMP level modulator to said host.

2. A method of Claim 1 wherein said cAMP level modulator is a phosphodiesterase inhibitor.

3. A method of Claim 2 wherein said phosphodiesterase inhibitor is an inhibitor of a phosphodiesterase 4 isoform.

4. A method of ovulation induction in a female host comprising the administration of a non-polypeptide cAMP level modulator to said host prior to the luteal phase of the host's ovulatory cycle.

5. A method of Claim 4 wherein said non-polypeptide cAMP level modulator is a phosphodiesterase inhibitor.

6. A method of Claim 5 wherein said phosphodiesterase inhibitor is an inhibitor of a phosphodiesterase 4 isoform.

7. A method of a combined treatment for stimulating follicular development and ovulation induction in a female host comprising the administration of an agent which increases follicle stimulating hormone concentrations in said host during the follicular phase of the host's ovulatory cycle and

administering a non-polypeptide cAMP level modulator to said host prior to the luteal phase of the host's ovulatory cycle.

8. A method of Claim 7 wherein said agent is follicle stimulating hormone.

9. A method of Claim 7 wherein said agent is clomiphene.

10. A method of Claim 7 wherein said agent is a selective estrogen receptor modulator.

11. A method of Claim 7 wherein said agent is an aromatase inhibitor.

12. A method of Claim 7 wherein said agent is an inhibitor of related steroidogenic enzymes that results in a decrease in total estrogen production.

13. A method of Claim 7 wherein said non-polypeptide cAMP level modulator is a phosphodiesterase inhibitor.

14. A method of Claim 13 wherein said phosphodiesterase inhibitor is an inhibitor of a phosphodiesterase 4 isoform.

15. A method of Claim 7 wherein luteinizing hormone is also administered to said host to induce ovulation prior to the luteal phase of the host's ovulatory cycle.

16. A method of Claim 7 wherein luteinizing hormone is also administered at reduced concentrations compared to

existing regimens to said host to induce ovulation prior the luteal phase of the host's ovulatory cycle.

17. A method of Claim 7 wherein chorionic gonadotropin is also administered to said host to induce ovulation prior the luteal phase of the host's ovulatory cycle.

18. A method of Claim 7 wherein chorionic gonadotropin is also administered at reduced concentrations compared to existing regimens to said host to induce ovulation prior to the luteal phase of the host's ovulatory cycle.

19. A method of ovulation induction in a female host comprising the administration of a non-polypeptide cAMP level modulator to said host at the time point of an existing ovulation induction regimen at which hCG or LH is administered to said host.

20. A method of Claim 20 wherein the non-polypeptide cAMP level modulator is co-administered with hCG or LH.

21. A method of Claim 20 wherein the non-polypeptide cAMP level modulator is administered alone and not co-administered with hCG or LH.

22. A non-polypeptide cAMP level modulator for its use as an ovulation induction agent.

23. A non-polypeptide cAMP level modulator for its use in the treatment of an anovulation disorder.

24. A pharmaceutical composition containing non-polypeptide cAMP level modulator, for its use in the treatment of an anovulation disorder.

25. Use of non-polypeptide cAMP level modulator in a pharmaceutical composition for the treatment of an anovulatory disorder.

26. Use of non-polypeptide cAMP level modulator for the preparation of a medicament to be used in the treatment of an anovulatory disorder.

27. A method of collecting oocytes for *in vitro* fertilization comprising the administration of a non-polypeptide cAMP level modulator.

28. A method of Claim 2 wherein the phosphodiesterase inhibitor is selected from the group consisting of: Rolipram, Arofylline (Almirall), Ariflo® (SmithKline Beecham), Roflumilast (Byk Gulden), Denbufylline (SmithKline Beecham), RS-17597 (Syntex), SDZ-ISQ-844 (Novartis), 4-[2,3-bis(hydroxymethyl)-6,7-diethoxynaphthyl]-1-(2-hydroxyethyl)hydropyridin-2-one (T-440; Tanabe Seiyaku), methyl 3-[6-(2H-3,4,5,6-tetrahydropyran-2-yloxy)-2-(3-thienylcarbonyl)benzo[b]furan-3-yl]propanoate (Bayer), 2-methyl-1-[2-(methylethyl)(8-hydropyrazolo[1,5-a]pyridin-3-

yl)]propan-1-one (Ibudilast; Kyorin), N-(3,5-dichloro(4-pyridyl))(3-cyclopentyloxy-4-methoxyphenyl)carboxamide (RP 73401; Rhône-Poulenc Rorer), (1E)-1-aza-2-(3-cyclopentyloxy-4-methoxyphenyl)prop-1-enyl aminooate (PDA-641; American Home Products), 4-cyano-4-(3-cyclopentyloxy-4-ethoxyphenyl)cyclohexanecarboxylic acid (SB207499; SmithKline Beecham), Cipamfylline (SmithKline Beecham), 5-[3-((2S)bicyclo[2.2.1]hept-2-yloxy)-4-methoxyphenyl]-1,3-diazaperhydroin-2-one (CP-80633; Pfizer), 1-(3-nitrophenyl)-3-(3-pyridylmethyl)-1,3-dihydropyridino[2,3-d]pyrimidine-2,4-dione (RS-25344; Syntex), 4-((1R)-1-phenyl-2-(4-pyridyl)ethyl)-2-cyclopentyloxy-1-methoxybenzene (CDP-840; Celltech), (3-{[(3-cyclopentyloxy-4-methoxyphenyl)methyl]amino}pyrazol-4-yl)methan-1-ol, Ro-20-1724 (Roche Holding AG), Piclamilast, Doxofylline (Instituto Biologico Chemioterapico ABC SpA), RPR-132294 (Rhône-Poulenc Rorer), RPR-117658A (Rhône-Poulenc Rorer), L-787258 (Merck Frosst Canada), E-4021 (Eisai Co. Ltd.), GF-248 (Glaxo Wellcome), SKF-107806 (SmithKline Beecham), IPL-4088 (Inflazyme Pharmaceuticals Ltd.), {3-[(3-cyclopentyloxy-4-methoxyphenyl)methyl]-8-(methylethyl)purin-6-yl}ethylamine (V-11294A; Napp Research Centre Ltd.), Atizoram (Pfizer), 5-(3-cyclopentyloxy-4-methoxyphenyl)pyridine-2-carboxamide (CP-353164; Pfizer), methyl 3-[2,4-dioxo-3-benzyl-1,3-

dihydropyridino[2,3-d]pyrimidinyl]benzoate (CP-77059; Pfizer), CP-146523 (Pfizer), CP-293321 (Pfizer), CI-1044(Pfizer), PD-189659(Pfizer), CI-1018 (Pfizer), CP-220629 (Pfizer), 1-(3-nitrophenyl)-3-(4-pyridylmethyl)-1,3-dihydropyridino[2,3-d]pyrimidine-2,4-dione (RS-25344-000; Roche Bioscience), Mesopram (Schering AG), N-(2,5-dichloro(3-pyridyl))(8-methoxy(5-quinolyl))carboxamide (D-4418; Chiroscience), T-2585 (Tanabe Seiyaku), 4-[4-methoxy-3-(5-phenylpentyloxy)phenyl]-2-methylbenzoic acid, XT-044 (Hokuriku University), XT-611 (Kanzawa University), WAY-126120 (Wyeth-Ayerst Pharmaceuticals Inc.), 1-aza-10-(3-cyclopentyloxy-4-methoxyphenyl)-7,8-dimethyl-3-oxaspiro[4.5]dec-7-en-2-one (WAY-122331; Wyeth-Ayerst Pharmaceuticals Inc.), [(3S)-3-(3-cyclopentyloxy-4-methoxyphenyl)-2-methyl-5-oxopyrazolidinyl]-N-(3-pyridylmethyl)carboxamide (WAY-127093B; Wyeth-Ayerst Pharmaceuticals Inc.), PDB-093 (Wyeth-Ayerst Pharmaceuticals Inc.), 3-(1,3-dioxobenzo[c]azolin-2-yl)-3-(3-cyclopentyloxy-4-methoxyphenyl)propanamide (CDC-801; Celgene Corp.), CC-7085 (Celgene Corp.), CDC-998 (Celgene Corp.), NCS-613 (CNRS), CH-3697 (Chiroscience), CH-3442 (Chiroscience), CH-2874 (Chiroscience), CH-4139 (Chiroscience), RPR-114597 (Rhône-Poulenc Rorer), RPR-122818 (Rhône-Poulenc Rorer), (7aS,7R)-7-(3-cyclopentyloxy-4-methoxyphenyl)-7a-methyl-2,5,6,7,7a-pentahydro-2-azapyrrolizin-3-one,GW-3600 (Glaxo-Wellcome), KF-

19514 (Kyowa Hakko Kogyo Co Ltd.), CH-422 (Celltech Group), CH-673 (Celltech Group), CH-928 (Celltech Group), D-22888 (Asta Medica), AWD-12-232 (Asta Medica), YM-58997 (Yamanouchi), IC-485 (ICOS Corp.), KW-4490 (Kyowa Hakko Kogyo Co. Ltd.), YM-976 (Yamanouchi), Sch-351591 (Celltech Group), AWD-12-343 (Asta Medica), N-(3,5-dichloro(4-pyridyl))-2-{1-[(4-fluorophenyl)methyl]-5-hydroxyindolin-3-yl}-2-oxoacetamide (AWD-12-281; Asta Medica), Ibudilast (Kyorin Pharmaceutical Co. Ltd.), Cilomilast (SmithKline Beecham), BAY-19-8004 (Bayer), methyl 3-{2-[(4-chlorophenyl)carbonyl]-6-hydroxybenzo[b]furan-3-yl}propanoate, 5-methyl-4-[(4-methylthiophenyl)carbonyl]-4-imidazolin-2-one, 5,6-diethoxybenzo[b]thiophene-2-carboxylic acid (Tibenelast), and 4-(3-bromophenyl)-1-ethyl-7-methylhydropyridino[2,3-b]pyridin-2-one (YM-58897; Yamanouchi).

29. A method of Claim 2 wherein the phosphodiesterase inhibitor is selected from the group consisting of: theophylline, isobutylmethylxanthine, AH-21-132, Org-30029 (Organon), Org-20241 (Organon), Org-9731 (Organon), Zardaverine, vinpocetine, EHNA (MEP-1), Milrinone, Siguazodan, Zaprinast, SK+F 96231, Tolafentrine (Byk Gulden), Filaminast (Wyeth-Ayerst Pharmaceuticals).

30. A method of Claim 2 wherein the phosphodiesterase inhibitor is selected from the group

consisting of: Cis-4-cyano-4-(3-(cyclopentyloxy)-4-methoxyphenyl) cyclohexane-1-carboxylic acid; 3-(Cyclopentyloxy)-N-(3,5-dichloropyridin-4-yl)-4-methoxybenzamide; 2- (4- (6,7-Diethoxy-2,3-bis (hydroxymethyl) naphthalen-1-yl) pyridin-2-yl)-4-(3-pyridyl) pthalazin-1 (2H)-one hydrochloride; 7-Benzylamino-6-chloro-2-piperazino-4-pyrrolidinopteridine.